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WA #: 032-RICO-02KD

Region 2 RAC2 Remedial Action Contract

Final RI/FS Quality Assurance Project Plan Addendum No. 1, Additional Remedial Investigation Sampling Plan

Matteo & Sons, Inc. Site
Remedial Investigation/Feasibility
Study
Thorofare, New Jersey

December 12, 2014

**CDM
Smith**

**REGION 2
REMEDIAL ACTION CONTRACT (RAC) 2**

**FINAL RI/FS QUALITY ASSURANCE PROJECT PLAN ADDENDUM (QAPP) NO. 1
Matteo & Sons, Inc. Site
Remedial Investigation/Feasibility Study
Thorofare, New Jersey**

Prepared for: US Environmental Protection Agency (EPA) Region 2

Prepared by: CDM Smith

Date: December 12, 2014

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QUALITY ASSURANCE PROJECT PLAN (QAPP) ADDENDUM NO.1
for the
Additional Remedial Investigation Sampling
Matteo and Sons, Inc. Site
Remedial Investigation/Feasibility Study (RI/FS)

Contract: Remedial Action Contract (RAC) 2, EPA Region 2 EP-W-09-002
Work Assignment Number/Operable Unit: 032-RICO-02KD/00
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Date: December 12, 2014

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United States Environmental Protection Agency (EPA), New Jersey Department of Environmental Protection (NJDEP)

Dates and Titles of Plans Written for Previous Site Work, if Applicable:

Final QAPP, Matteo & Sons Inc. Site, September 19, 2011.

Required QAPP elements and required information that are not applicable to the project, and an explanation for their exclusions: Worksheets 3 through 8, 12, 13, 19, and 21-25 and 28 through 37 are included in the Final QAPP (CDM Smith 2011)

QAPP Addendum No.1 Summary MATTEO & SONS, INC. SITE

TITLE: Additional Remedial Investigation Sampling

DESCRIPTION: This notification documents re-collection of soil and groundwater samples and collection of additional soil samples as part of the Matteo & Sons, Inc. Remedial Investigation (RI) field program. Sampling will be conducted as per the attached revised worksheets and the Final QAPP (September, 2011)

REASON FOR DEVIATION: Due to concerns regarding the reliability of organic laboratory results from samples collected during the initial EPA RI, all soil and groundwater samples will be re-collected. The laboratory data generated from these re-collected soil and groundwater samples will be used in support of the RI/FS Reports and the associated risk assessments. Soil samples will be re-collected from 41 soil borings, as shown on Figure 3 and detailed in the attached modified QAPP worksheets. A total of 37 groundwater samples will be re-collected, as shown in Figure 4 and detailed in the attached modified QAPP worksheets. Figures 1 and 2 are included in this QAPP Addendum to show the site location and site map.

In addition to the previously collected soil samples, ten additional surface soil samples will be collected at the Matteo Property in the vicinity of the rental home to address data gaps identified in this area (see Figure 3). The exact locations of the surface soil samples will be determined in the field based on the site reconnaissance.

The following modified QAPP worksheets detail the planned soil and groundwater sampling activities:

- 14 & 16 - Project Tasks and Schedule
- 17d - Soil Boring, Drilling and Testing
- 17e - Environmental Sampling
- 18 - Sampling Locations and Methods/SOP Requirements
- 20 - Field Quality Control Summary
- 26 & 27 - Sample Handling, Custody and Disposal
- 28 - Analytical Quality Control and Corrective Action
- Table 1a - Reference Limits and Evaluation Table- Soils
- Table 1b - Reference Limits and Evaluation Table- Groundwater

RECOMMENDED/MODIFICATION: Re-collect RI soil and groundwater samples and collect additional surface soil samples as detailed in this addendum, attached modified QAPP worksheets and the Final QAPP dated September 19, 2011.

IMPACT ON DATA QUALITY OBJECTIVES: The data produced from this sampling program will replace the unreliable laboratory data previously generated during the EPA RI Field Program and will address additional soil data gaps.

**QAPP Worksheet #14 &16: Project Tasks & Schedule
(UFP-QAPP Manual Section 2.8.2)
(EPA 2106-G-05 Section 2.2.4)**

Project Tasks: CDM Smith will conduct soil and groundwater re-sampling and additional soil sampling to aid in determining the nature and extent of contamination at the Matteo & Sons, Inc. Site, allowing completion of the Remedial Investigation, Feasibility Study and Risk Assessment Reports. The following tasks will be performed:

- Collect 10 additional surface soil samples
- Re-collect soil samples from 41 soil borings.
- Re-collect 34 monitoring well and 3 potable water well samples.

Sampling Tasks: For specific sampling locations and depths, see Figures 3 and 4 and Worksheet #18.

Analysis Tasks: The following sample analyses are anticipated for the Matteo site:

- Additional Surface Soil Samples: Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs) including 1,4-dioxane, pesticides, PCBs, Target Analyte List (TAL) metals, hexavalent chromium, mercury and cyanide.
- Soil Boring Samples: TCL VOCs, TCL SVOCs, pesticides, and PCBs.
- Monitoring and Potable Well Samples: Trace level VOCs, TCL SVOCs, pesticides, and PCBs.

Schedule: The anticipated schedule of the field sampling event is as follows:

- December 2014 – Monitoring Well and Potable Well Sampling
- January 2015 – Soil Sampling

**QAPP Worksheet # 17d: Soil Boring, Drilling and Testing
Sampling Design and Rationale
(UFP-QAPP Manual Section 3.1.1)
(EPA 2106-G-05 Section 2.3.1)**

Soil Sampling

Soil samples will be collected to replace unreliable laboratory data obtained during the previous EPA RI field investigation. Ten additional surface soil samples will also be collected in the vicinity of the rental home to fill gaps identified in the existing data. To separate the site into manageable units and to support the HHRA and FS reports, the soil investigation was divided into four areas (the scrapyard area, the open field/waste disposal area, the rental home area and Willow Woods), based on functional differences defining the areas. Figure 3 shows the proposed soil sampling locations. Surface soil samples in the vicinity of the rental home will be determined in the field based on surface soil reconnaissance.

Soil borings will be collected as described in the Final QAPP (September, 2011). The analytical parameters and numbers of samples to be collected during the soil sampling program are presented in Worksheet #18 of this addendum.

**QAPP Worksheet # 17e: Environmental Sampling
Sampling Design and Rationale
(UFP-QAPP Manual Section 3.1.1)
(EPA 2106-G-05 Section 2.3.1)**

Monitoring and Potable Well Sampling

One round of groundwater samples will be collected at the Matteo site to replace unreliable laboratory data obtained during the previous EPA RI field investigation. Analytical data from groundwater sampling will be used to support preparation of the RI, HHRA, and FS reports.

Groundwater samples will be collected from a total of 34 monitoring wells and 3 potable wells (PW-1, PW-2, and PW-3). It is anticipated that all monitoring wells will be sampled using the EPA Region 2 low-flow method (EPA 1998b). The potable wells will be sampled at a spigot prior to any water treatment. Sampling procedures are provided in Appendix A of the Final QAPP (September 2011).

Groundwater samples will be collected from each monitoring well and potable well for the analyses listed on Worksheet 18. QC samples will be collected as indicated on Worksheet #20.

QAPP Worksheet #18: Sampling Locations and Methods/SOP Requirements Table

Sampling Location ID Number	Matrix	Depth	Analytical Group	Concentration Level	Number of Samples	Analytical/Sampling Methods	Rationale for Sampling Location
Rental Home Area							
RHA-SS-001 to RHA-SS-010	Soil	0 to 1 ft bgs	TCL VOCs, SVOCs, PCBs, pesticides; TAL Metals, mercury, cyanide and hexavalent chromium	Low	11	SOM01.2 and ISM01.3/ DPT	10 additional surface soil samples were added to the rental home area to assist in characterization of underlying soils for use in RI, HHRA and FS. Soils had not been collected by EPA in this area.
Scrapyard Soil Sampling							
SB-101 SB-102 SB-103	Soil	0 to 2 ft bgs 2 to 4 ft bgs 4 to 8 ft bgs 8 to 12 ft bgs	TCL VOCs, SVOCs, PCBs, pesticides	Low	30	SOM01.2/ DPT	Characterization of underlying soils for use in RI, HHRA, FS. Soil sampling not previously performed in this area which was covered with debris during the NJDEP RI.
SB-104 SB-105 SB-106	Soil						
SB-107		0 to 2 ft bgs 2 to 4 ft bgs 8 to 12 ft bgs 12 to 16 ft bgs					Delineation of vertical extent of contamination; samples collected at 1 to 11.5 feet bgs have exhibited concentrations of PCBs and metals above NJDEP RSC. Characterization of underlying soils for use in RI, HHRA, FS.
Open Field/Waste Disposal Area Soil Sampling							
SB-108 SB-109 SB-110 SB-111	Soil	0 to 2 ft bgs 2 to 4 ft bgs 4 to 8 ft bgs 8 to 12 ft bgs	TCL VOCs, SVOCs, PCBs, pesticides	Low	16	SOM01.2/ DPT	Characterization of soils near Scrapyard Area and sweating fire box which were obstructed by debris piles during prior investigations.
SB-112	Soil	5.5 to 6 ft bgs 7.5 to 8 ft bgs	TCL PCBs	Low	2		Delineation of vertical extent of subsurface PCB contamination identified in samples collected from TP-86, near the westernmost Waste Disposal Area.
SB-113 SB-114 SB-115	Soil	4.5 to 5 ft bgs 7.5 to 8 ft bgs	TCL PCBs	Low	6		Delineation of horizontal and vertical extent of subsurface PCB contamination within Waste Disposal Area identified during the NJDEP RI.
SB-116 SB-117 SB-118	Soil	0 to 2 ft bgs 2 to 4 ft bgs 4 to 8 ft bgs 8 to 12 ft bgs	TCL VOCs, SVOCs	Low	12		Characterization of subsurface soils up-gradient of VOC impacts.
SB-119 SB-120 SB-121	Soil	5.5 to 6 ft bgs 7.5 to 8 ft bgs	TCL PCBs	Low	6		Delineation of vertical extent of subsurface PCB contamination identified during the NJDEP RI.

QAPP Worksheet #18: Sampling Locations and Methods/SOP Requirements Table

Sampling Location ID Number	Matrix	Depth	Analytical Group	Concentration Level	Number of Samples	Analytical/Sampling Methods	Rationale for Sampling Location
SS-101 SS-102 SS-103 SS-104	Soil	0 to 2 ft bgs	TCL PCBs, pesticides	Low	4	SOM01.2/ DPT	Characterization of surface soils within the Open Field Area.
SS-105 SS-106	Soil	0 to 2 ft bgs	TCL PCBs	Low	2		Delineation of horizontal extent of surficial PCB contamination within Waste Disposal Area identified during the NJDEP RI.
SS-107	Soil	0 to 2 ft bgs	TCL PCBs	Low	1		Delineation of horizontal extent of surficial PCB contamination within Open Field Area identified during the NJDEP RI.
SS-111 SS-112 SS-113	Soil	0 to 2 ft bgs	TCL PCBs	Low	3		Delineation of horizontal extent of surficial PCB contamination identified during the NJDEP RI at test pit FULL-2.
SS-114 SS-115	Soil	0 to 2 ft bgs	TCL PCBs	Low	2		Characterization of surface soils along former 'road surface'.
SS-116 SS-117 SS-118 SS-119 SS-120	Soil	0 to 2 ft bgs	TCL PCBs	Low	5		Characterization of surface soils along former 'road surface'. Investigation of lead contamination between MW-3 and MW-7 and near NJDEP RI test pit TPSS-F.
SS-121 SS-122 SS-123 SS-124	Soil	0 to 2 ft bgs	TCL PCBs	Low	4		Characterization of surface soils along former 'road surface'
Willow Woods Sampling							
WW-SB-201 WW-SB-202 WW-SB-203 WW-SB-204 WW-SB-205 WW-SB-206 WW-SB-207 WW-SB-208 WW-SB-209 WW-SB-210	Soil	0 to 2 ft bgs Between 2 ft bgs and top of water table	TCL VOC, TCL SVOC, TCL PCBs, TCL pesticides	Low	11	SOM01.2/ DPT	Characterization of soil in residential area where fill may have been used to level the ground prior to manufactured homes being installed.

QAPP Worksheet #18: Sampling Locations and Methods/SOP Requirements Table

Sampling Location ID Number	Matrix	Depth	Analytical Group	Concentration Level	Number of Samples	Analytical/Sampling Methods	Rationale for Sampling Location
Monitoring and Potable Well Sampling 1 Round; 37 locations (29 existing wells, 5 new wells and 3 potable wells)	Groundwater	-	TCL Trace VOCs TCL SVOCs TCL Pesticides TCL PCBs	Low	39	SOM01.2/ Low flow	Characterize the nature and extent of contamination in groundwater from contaminants associated with the site

Notes:

Bgs – below ground surface
 PCB – polychlorinated biphenyl
 SVOC – semi-volatile organic compound
 TP – Test Pit
 VOC – volatile organic compound

1. The frequency of QC samples are outlined above, the exact number of QC samples will be determined in the field.

QAPP Worksheet #20: Field Quality Control Summary
(UFP-QAPP Section 3.1.1 and 3.1.2)
(EPA 2106-G-05 Section 2.2.6)

Matrix	Analytical Group	Concentration Level	Analytical and Preparation SOP Reference	No. of Samples	No. of Field Duplicate Pairs	No. of Extra Volume Laboratory QC (e.g., MS/MSD) Samples	No. of Equipment Blanks	No. of Trip Blanks	No. of Total Samples
Soil	TCL VOC	Low	See Worksheet 19	80	4	NA	1 per decontamination event (~ 4)	NA	84
	Percent Moisture	NA		80	4	NA		NA	84
	TCL SVOC	Low		80	4	NA		NA	84
	TCL Pesticides	Low		72	4	4		NA	76
	TCL PCBs	Low		103	6	6		NA	109
	TAL Metals, Hg and CN	Low		10	1	1		NA	11
Groundwater	Trace VOCs + SIM	Low		37	2	NA	2	10	49
	SVOCs + SIM	Low		37	2	NA		NA	41
	TCL Pesticides	Low		37	2	2			41
	TCL PCBs	Low		37	2	2			41

The frequency of QC samples are outlined above, the exact number of QC samples will be determined in the field.

Notes: SIM – Selective Ion Monitoring

QAPP Worksheet #26 & 27: Sample Handling, Custody, and Disposal
(UFP-QAPP Manual Section 3.3)
(EPA 2106-G-05 Section 2.3.3)

Sample Identification Procedures: Each sample will be labeled with a specific sample ID that depicts a specific location. Each sample will also be labeled with a CLP or Non-CLP assigned number. Depending on the type of sample, additional information such as depth, sampling round, date, etc. will be added. Examples are provided below.

Soil Samples (surface soil and subsurface soil)

Soil samples (Willow Woods soil sampling, scrapyard soil sampling and open field/ waste disposal soil samples) will be named (SS or SB) - # - Depth interval, where SS refers to surface soil, SB refers to soil boring, # refers to sample ID number and the depth interval refers to the top and bottom of a sampling interval separated by a dash and expressed in feet bgs followed by an X. An example would be SB-101-0-2-X. Samples collected in Willow Woods will have a WW prefix added to the beginning of the sample. Surface soil samples collected in the rental home area will be named RHA-SS- #-depth interval.

Monitoring and Potable Well Sampling

Monitoring and potable well samples will be named MW- # - RIFS-X, where MW refers to monitoring well, # refers to the monitoring well number, and RIFS-X identifies the sample as being collected during the RIFS revised phase of work. An example would be MW-6-RIFS-X.

Additional Notes

Duplicates will use the same sampling scheme as described for each medium above, however the sample # will be modified by adding a 90 before the number. Therefore MW-101-RIFS becomes MW-90101-RIFS-X; SB-1-0-2-X becomes SB901-0-2-X etc.

Background locations, if collected, should have the suffix bg (for background) tagged to the sampling ID with a hyphen to identify them as a background location.

**QAPP Worksheet #28: Analytical Quality Control and Corrective Action
(UFP-QAPP Manual Section 3.4 and Tables 4, 5, and 6)
(EPA 2106-G-05 Section 2.3.5)**

CDM Smith Generic QAPP

See the CDM Smith Generic QAPP for QC sample information for the following analyses:

- Aqueous: TCL VOCs, TCL SVOCs, TCL Pesticides, TCL PCBs, Unless otherwise noted the relative percent difference (RPD) for the aqueous field duplicates will be < 35% and for lab duplicates will be <20%.
- Soil: TCL VOCs, TCL SVOCs, TCL Pesticides, TCL PCBs, Unless otherwise noted the relative percent difference (RPD) for the soil field duplicates will be < 50% and for lab duplicates will be <35%.

Tables

Table 1a
Reference Limits and Evaluation Table - Soils
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	Ecological Screening Criteria				Human Health Screening Criteria						Project Action Limit ¹²		Project Quantitation (Line 6) (PQIG)	Analytical Method					Project-Specific Option	
		EPA Region 5 (EPAECOS) ¹	Soil PRGs (ECOPRG) ²	EPA Region 5 (EPAECOS) ³	Ecological Screening Criteria ⁴	EPA Human Health Screening Level (HHSRL) ⁵	NIDEP Residential Direct Contact Soil Remediation Standard (NIROCSRS) ⁶	NIDEP Non-Residential Direct Contact Soil Remediation Standard (NIROCSRS) ⁷	NIDEP Default Impact to Groundwater Soil Remediation Standard (NIROCSRS) ⁸	Human Health Screening Criteria ⁹	Value	Source	CRCL								
													Analytical Method - SOM1.2 Low Sol		Analytical Method - SOM1.2 Low Sol	Analytical Method - SOM1.2 Medium Sol	Analytical Method - SOM1.2 Sol (Standard)	Analytical Method - SOM1.2 ICP-AES and MS for Soil			
Inorganic Analytes (mg/kg)																					
7429-90-5	Aluminum ^a	NL	NL	NL	NL	7,700 n	78,000	NA	3,900	3,900	3,900	NIROWSRS	1,300	-	-	-	-	-	20	Standard	
7440-36-0	Antimony	0.17	5	0.142	0.17	3.1 n	31	450	3.10	0.17	0	EPAECOS	1	-	-	-	-	-	1	Standard	
7440-38-2	Arsenic	18	9.9	5.7	18	0.39 ca	0.4	3	0.006	0.006	0.006	NIROWSRS	1	-	-	-	-	-	1	Standard	
7440-39-3	Barium	330	283	1.04	330	1,500 n	16,000	59,000	1,300	1,300	1,300	EPAECOS	110	-	-	-	-	-	20	Standard	
7440-41-7	Beryllium	21	10	1.06	21	16 n	16	140	0.5	0.5	0.5	NIROWSRS	0.5	-	-	-	-	-	0.5	Standard	
7440-43-9	Cadmium	0.36	4	0.0022	0.36	7 n	78	78	3	0.36	0	EPAECOS	0.5	-	-	-	-	-	0.5	Standard	
7440-70-2	Calcium	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	500	-	-	-	-	-	500	Standard	
7440-47-3	Chromium	26 ^a	0.4	0.4	26	12,000	NL	NL	NL	12,000	25	EPAECOS	9	-	-	-	-	-	1	Standard	
7440-48-4	Cobalt	13	20	0.14	13	2.3 n	1,600	590	59	2.3	2.3	EPAECOS	1	-	-	-	-	-	0.5	Standard	
7440-50-8	Copper	28	60	5.4	28	310 n	3,300	45,000	7,300	310	28	EPAECOS	9	-	-	-	-	-	2.5	Standard	
57-12-5	Cyanide	NL	NL	1.33	1.33	160 n	1,600	23,000	13	13	1.33	EPAECOS	0.5	-	-	-	-	-	0.5	Standard	
7439-89-6	Iron ^{III}	NL	NL	NL	NL	5,500 n	NL	NL	NL	5,500	5,500	EPAECOS	1,833	-	-	-	-	-	10	Standard	
7439-92-1	Lead	11	40.5	0.0517	11	400 n(1)	400	800	59	11	11	EPAECOS	4	-	-	-	-	-	1	Standard	
7439-95-4	Magnesium	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	500	-	-	-	-	-	500	Standard	
7439-96-5	Manganese	220	NL	NL	220	180 n	11,000	5,900	42	42	42	NIROWSRS	14	-	-	-	-	-	1.5	Standard	
7439-97-6	Mercury	NL	0.00051	0.1	0.00051	0.78 n(2)	23	65	0.1 PCL	0.1	0.00051	0	0.1	-	-	-	-	-	0.1	Standard	
7440-01-0	Nickel	38	30	13.6	38	150 n(1)	1,600	23,000	31	31	31	NIROWSRS	10	-	-	-	-	-	4	Standard	
7440-05-7	Potassium	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	500	-	-	-	-	-	500	Standard	
7782-49-2	Selenium	0.52	0.21	0.0276	0.52	39 n	390	5,700	7	7	0.52	EPAECOS	1.5	-	-	-	-	-	3.5	Standard	
7440-22-4	Silver	4.2	2	4.04	4.2	39 n	390	5,700	1 PCL	1	1	NIROWSRS	1	-	-	-	-	-	1	Standard	
7440-23-5	Sodium	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	500	-	-	-	-	-	500	Standard	
7440-26-0	Thallium	NL	1	0.0569	1	0.078 n	3	79	3 PCL	0.078	0	EPAECOS	2.5	-	-	-	-	-	2.5	Standard	
7440-62-2	Vanadium	7.8	2	1.58	7.8	39 n(4)	78	1,100	NL	38	7.8	EPAECOS	5	-	-	-	-	-	0.5	Standard	
7440-66-6	Zinc	46	8.5	6.62	46	2,300 n	23,000	110,000	600	600	600	EPAECOS	15	-	-	-	-	-	6	Standard	
Polychlorinated Biphenyls (µg/kg)																					
72-54-8	1,4'-DDD	21 ^a	NL	758	21	2,000 ca	3,000	13,000	3,000	2,000	21	EPAECOS	7	-	-	-	-	-	3.3	Standard	
72-55-9	1,4'-ODE	21 ^a	NL	596	21	1,400 ca	2,000	9,000	12,000	1,400	21	EPAECOS	7	-	-	-	-	-	3.3	Standard	
50-29-3	1,4'-DDT	21 ^a	NL	3.5	21	1,700 ca	2,000	8,000	7,000	1,700	21	EPAECOS	7	-	-	-	-	-	3.3	Standard	
109-00-2	Aldrin	NL	NL	3.32	3.32	29 ca	40	200	100	29	3.32	EPAECOS	1.7	-	-	-	-	-	1.7	Standard	
518-24-6	alpha-BHC	NL	NL	99.4	99.4	77 ca	200	500	2 PCL	2	2	NIROWSRS	1.7	-	-	-	-	-	1.7	Standard	
3103-71-9	alpha-Chlordane	NL	NL	224 ¹	224	1,600 n(8)	200	1,000	30	30	30	NIROWSRS	10	-	-	-	-	-	1.7	Standard	
2374-11-2	Aroclor-1016	NL	371 ^a	0.332 ^a	371	390 n	200 ^a	1,000 ^a	200 ^a	200	200	NIROCSRS	67	-	-	-	-	-	33	Standard	
11104-28-2	Aroclor-1221	NL	371 ^a	0.332 ^a	371	140 ca	300 ^a	1,000 ^a	200 ^a	340	340	EPAECOS	47	-	-	-	-	-	33	Standard	
11141-26-5	Aroclor-1232	NL	371 ^a	0.332 ^a	371	140 ca	300 ^a	1,000 ^a	200 ^a	340	340	EPAECOS	47	-	-	-	-	-	33	Standard	
53469-21-9	Aroclor-1242	NL	371 ^a	0.332 ^a	371	220 ca	300 ^a	1,000 ^a	200 ^a	200	200	NIROCSRS	67	-	-	-	-	-	33	Standard	
2672-29-6	Aroclor-1248	NL	371 ^a	0.332 ^a	371	220 ca	300 ^a	1,000 ^a	200 ^a	200	200	NIROCSRS	67	-	-	-	-	-	33	Standard	
1097-69-1	Aroclor-1254	NL	371 ^a	0.332 ^a	371	110 n	300 ^a	1,000 ^a	200 ^a	110	110	EPAECOS	37	-	-	-	-	-	33	Standard	
1096-82-5	Aroclor-1260	NL	371 ^a	0.332 ^a	371	220 ca	300 ^a	1,000 ^a	200 ^a	200	200	NIROCSRS	67	-	-	-	-	-	33	Standard	
7374-23-5	Aroclor-1262	NL	371 ^a	0.332 ^a	371	110 n	300 ^a	1,000 ^a	200 ^a	110	110	EPAECOS	37	-	-	-	-	-	33	Standard	
11100-14-4	Aroclor-1268	NL	371 ^a	0.332 ^a	371	110 n	300 ^a	1,000 ^a	200 ^a	110	110	EPAECOS	37	-	-	-	-	-	33	Standard	
519-85-7	beta-BHC	NL	NL	3.98	3.98	270 ca	400	2,000	2 PCL	2	2	NIROWSRS	1.7	-	-	-	-	-	1.7	Standard	
519-86-8	delta-BHC	NL	NL	9,940	9,940	270 ca	NL	NL	NL	270	270	EPAECOS	90	-	-	-	-	-	1.7	Standard	
52-27-1	Dieldrin	4.9	NL	2.38	4.9	30 ca	40	200	3 PCL	3	3	NIROWSRS	1.3	-	-	-	-	-	3.3	Standard	
259-98-8	Endosulfan I	NL	NL	119	119	37,000 n	470,000	6,800,000	2,000	119	119	EPAECOS	40	-	-	-	-	-	1.7	Standard	
13713-45-9	Endosulfan II	NL	NL	119	119	37,000 n	470,000	6,800,000	2,000	119	119	EPAECOS	40	-	-	-	-	-	3.3	Standard	
1031-07-8	Endosulfan Sulfate	NL	NL	35.8	35.8	37,000 n(9)	470,000	6,800,000	1,000	1,000	35.8	EPAECOS	12	-	-	-	-	-	3.3	Standard	
72-20-8	Endrin	NL	NL	10.1	10.1	1,800 n	23,000	340,000	600	600	10.1	EPAECOS	3	-	-	-	-	-	3.3	Standard	
7421-93-4	Endrin aldehyde	NL	NL	10.5	10.5	1,800 n	NL	NL	NL	1,800	10.5	EPAECOS	4	-	-	-	-	-	3.3	Standard	
53494-70-5	Endrin ketone	NL	NL	NL	NL	1,800 n	NL	NL	NL	1,800	1,800	EPAECOS	600	-	-	-	-	-	3.3	Standard	
58-38-9	gamma-BHC (Lindane)	NL	NL	5	5	520 ca	400	2,000	2 PCL	2	2	NIROWSRS	2	-	-	-	-	-	1.7	Standard	
1103-74-2	gamma-Chlordane	NL	NL	224 ¹	224	1,600 n(8)	200	1,000	30	30	30	NIROWSRS	10	-	-	-	-	-	1.7	Standard	
76-44-8	Heptachlor	NL	NL	5.98	5.98	110 ca	300	700	300	300	5.98	EPAECOS	2	-	-	-	-	-	1.7	Standard	
1024-57-3	Heptachlor epoxide	NL	NL	152	152	53 ca	70	300	9	9	9	NIROWSRS	3	-	-	-	-	-	1.7	Standard	
72-43-5	Methoxychlor	NL	NL	19.9	19.9	31,000 n	390,000	5,700,000	100,000	31,000	19.9	EPAECOS	7	-	-	-	-	-	1.7	Standard	
2001-35-2	Toxaphene	NL	NL	119	119	440 ca	600	3,000	200	200	119	EPAECOS	170	-	-	-	-	-	170	Standard	

Table 1a
Reference Limits and Evaluation Table - Soils
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	Ecological Screening Criteria				Human Health Screening Criteria					Project Action Limit ¹⁴		Project Quantitation Limit Goal (PQL)	Analytical Method					
		EPA BioSta (EPA/CS) ¹	Soil PRGs (EPA/PRG) ²	EPA Region 5 (EPA/ECOS) ³	Ecological Screening Criteria ⁴	EPA Human Health Screening Level (EPA/HL) ⁵	NIEP Residential Direct Contact Soil Remediation Standard (NIEP/DCRS) ⁶	NIEP Non-Residential Direct Contact Soil Remediation Standard (NIEP/NDCRS) ⁷	NIEP Default Impact to Groundwater Soil Remediation Standard (NIEP/GWSRS) ⁸	Human Health Screening Criteria ⁹	Value	Source		CRCL					
														Analytical Method - SOM01.2 Low Sol	Analytical Method - SOM01.2 Low Sol	Analytical Method - SOM01.2 Low Medium Sol	Analytical Method - SOM01.2 Soil (Standard)	Analytical Method - SOM01.2 ICP-AIS and MS No Sol	Project-Specific Option
Volatile Organic Compounds (vg/kg)																			
71-35-6	1,1,1-Trichloroethane	NL	NL	29,800	29,800	640,000 ns	290,000	4,200,000	200	200	200	NIGWSRS	67	-	5	250	-	-	Low
79-34-5	1,1,2-Trichloroethane	NL	NL	127	127	560 ca	1,000	3,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	NL	NL	910,000 ns	NL	NL	NL	910,000	910,000	EPARL	303,333	-	5	250	-	-	Low
79-00-5	1,1,2-Trichloroethane	NL	NL	28,600	28,600	350 n	2,000	6,000	10	10	10	NIGWSRS	5	-	5	250	-	-	Low
75-34-3	1,1-Dichloroethane	NL	NL	20,100	20,100	3,300 ca	8,000	24,000	200	200	200	NIGWSRS	67	-	5	250	-	-	Low
75-35-4	1,1-Dichloroethane	NL	NL	8,780	8,780	24,000 n	11,000	150,000	5	5	5	NIGWSRS	5	-	5	250	-	-	Low
57-65-6	1,2,3-Trichlorobenzene	NL	20,000	NL	20,000	4,500 n	NL	NL	4,900	4,900	4,900	EPARL	1,633	-	5	250	-	-	Low
120-82-1	1,2,4-Trichlorobenzene	NL	20,000	11,100	20,000	6,700 n	73,000	820,000	400	400	400	NIGWSRS	133	-	5	250	-	-	Low
86-12-8	1,2-Dibromo-3-chloropropane	NL	NL	35.2	35.2	5.4 ca	80	200	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
106-63-4	1,2-Dichloroethane	NL	NL	1,730	1,730	34 ca	5	40	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
95-01-1	1,2-Dichlorobenzene	NL	NL	2,960	2,960	190,000 n	5,300,000	89,000,000	11,000	11,000	2,960	EPARL	987	-	5	250	-	-	Low
107-06-2	1,2-Dichloroethane	NL	NL	21,200	21,200	430 ca	900	3,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
78-87-5	1,2-Dichloropropane	NL	NL	32,700	32,700	940 ca	2,000	5,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
641-73-1	1,3-Dichlorobenzene	NL	NL	37,700	37,700	NL	5,300,000	89,000,000	12,000	12,000	12,000	NIGWSRS	4,000	-	5	250	-	-	Low
106-46-7	1,4-Dichlorobenzene	NL	20,000	546	20,000	2,400 ca	5,000	13,000	1,000	1,000	1,000	NIGWSRS	333	-	5	250	-	-	Low
123-81-1	1,4-Dioxane	NL	NL	NL	NL	4,900 ca	NL	NL	4,900	4,900	4,900	EPARL	1,633	-	100	5,000	-	-	Low
78-58-3	2-Butanone	NL	NL	89,600	89,600	2,800,000 n	3,100,000	44,000,000	600	600	600	NIGWSRS	700	-	10	500	-	-	Low
591-78-6	2-Heptanone	NL	NL	12,600	12,600	71,000 n	NL	NL	NL	71,000	12,600	EPARL	4,200	-	10	500	-	-	Low
108-10-1	4-Methyl-2-pentanone	NL	NL	443,000	443,000	2,200,000 ns	NL	NL	NL	2,200,000	443,000	EPARL	347,667	-	10	500	-	-	Low
57-84-1	Acetone	NL	NL	2,500	2,500	6,100,000 n	70,000,000	NA	12,000	12,000	2,500	EPARL	833	-	10	500	-	-	Low
71-43-1	Benzene	NL	NL	255	255	1,100 ca	2,000	5,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
74-97-5	Bromochloromethane	NL	NL	NL	NL	16,000 n	NL	NL	NL	16,000	16,000	EPARL	5,333	-	5	250	-	-	Low
75-27-4	Bromodichloromethane	NL	NL	540	540	270 ca	1,000	3,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
75-25-2	Bromofluoromethane	NL	NL	15,900	15,900	62,000 ca	81,000	280,000	20	20	20	NIGWSRS	7	-	5	250	-	-	Low
74-89-9	Bromomethane	NL	NL	235	235	770 n	25,000	59,000	30	30	30	NIGWSRS	10	-	5	250	-	-	Low
75-35-0	Carbon Disulfide	NL	NL	94.1	94.1	82,000 n	7,800,000	130,000,000	4,000	4,000	4,000	EPARL	31	-	5	250	-	-	Low
56-23-5	Carbon Tetrachloride	NL	NL	2,980	2,980	810 ca	400	2,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
108-90-7	Chlorobenzene	NL	40,000	13,100	40,000	29,000 n	510,000	7,400,000	400	400	400	NIGWSRS	133	-	5	250	-	-	Low
75-03-3	Chloroethane	NL	NL	NL	NL	1,500,000 n	220,000	1,100,000	NA	220,000	220,000	NIGWSRS	73,333	-	5	250	-	-	Low
17-46-3	Chloroform	NL	NL	1,190	1,190	290 ca	400	2,000	200	200	200	NIGWSRS	67	-	5	250	-	-	Low
74-87-3	Chloromethane	NL	NL	10,400	10,400	12,000 n	4,000	12,000	NA	4,000	4,000	NIGWSRS	1,333	-	5	250	-	-	Low
556-59-2	cis-1,2-Dichloroethane	NL	NL	NL	NL	16,000 n	230,000	560,000	200	200	200	NIGWSRS	67	-	5	250	-	-	Low
10061-01-5	cis-1,3-Dichloropropene	NL	NL	398	398	1,700 ca	2,000 ¹⁰	7,000 ¹⁰	5 ¹⁰ PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
110-82-7	Cyclohexane	NL	NL	NL	NL	120,000 ns	NL	NL	NL	120,000	120,000	EPARL	40,000	-	5	250	-	-	Low
124-48-1	Dibromodichloromethane	NL	NL	2,050	2,050	680 ca	5,000	8,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
75-71-8	Dichlorodifluoromethane	NL	NL	39,500	39,500	9,400 n	490,000	230,000,000	25,000	9,400	9,400	EPARL	3,133	-	5	250	-	-	Low
100-41-4	Ethylbenzene	NL	NL	5,160	5,160	5,400 ca	7,800,000	130,000,000	8,000	5,400	5,160	EPARL	1,720	-	5	250	-	-	Low
88-82-8	Isopropylbenzene	NL	NL	NL	NL	260,000 ns	NL	NL	NL	260,000	260,000	EPARL	86,667	-	5	250	-	-	Low
79-30-9	Methyl Acrylate	NL	NL	NL	NL	7,800,000 n	78,000,000	NA	14,000	14,000	14,000	NIGWSRS	4,667	-	5	250	-	-	Low
13314-4-4	Methyl Tert-Butyl Ether	NL	NL	NL	NL	43,000 ca	110,000	320,000	200	200	200	NIGWSRS	67	-	5	250	-	-	Low
108-87-2	Methyldichloromethane	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	5	-	5	250	-	-	Low
79-09-7	Methylene Chloride	NL	NL	4,050	4,050	11,000 ca	34,000	97,000	7	7	7	NIGWSRS	5	-	5	250	-	-	Low
100-42-5	Styrene	NL	300,000	4,690	300,000	820,000 ns	90,000	260,000	2,000	2,000	2,000	NIGWSRS	667	-	5	250	-	-	Low
127-18-4	Tetrachloroethene	NL	NL	9,920	9,920	350 ca	2,000	5,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
108-98-1	Toluene	NL	200,000	5,450	200,000	720,000 ns	6,300,000	8,000,000	4,000	4,000	4,000	NIGWSRS	1,333	-	5	250	-	-	Low
556-60-5	trans-1,2-Dichloroethene	NL	NL	784	784	15,000 n	300,000	720,000	400	400	400	NIGWSRS	133	-	5	250	-	-	Low
10061-02-6	trans-1,3-Dichloropropene	NL	NL	398	398	1,700 ca	2,000 ¹⁰	7,000 ¹⁰	5 ¹⁰ PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
79-08-6	Trichloroethane	NL	NL	12,400	12,400	440 n	7,000	20,000	7	7	7	NIGWSRS	5	-	5	250	-	-	Low
75-89-4	Trichlorofluoromethane	NL	NL	16,400	16,400	79,000 n	23,000,000	340,000,000	22,000	22,000	16,400	EPARL	5,467	-	5	250	-	-	Low
75-08-4	Vinyl Chloride	NL	NL	646	646	60 ca	300	2,000	5 PCL	5	5	NIGWSRS	5	-	5	250	-	-	Low
1330-20-7	Xylenes (Total)	NL	NL	10,000	10,000	63 n	12,000,000	170,000,000	12,000	63	63	EPARL	21	-	5	250	-	-	Low

Table 1a
Reference Limits and Evaluation Table - Soils
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	Ecological Screening Criteria				Human Health Screening Criteria						Project Action Limit ¹⁰		Project Quantification Limit G (PQL)	Analytical Method					Project-Specific Option
		EPA EcoSta (EPAECOS) ¹	Soil PRGs (ECONRG) ²	EPA Region 5 (EPAECOS) ³	Ecological Screening Criteria ⁴	EPA Human Health Screening Level (PPM/SL) ⁵	NIIEP Residential Direct Contact Soil Remediation Standard (NIIEP/DCRS) ⁶	NIIEP Non-Residential Direct Contact Soil Remediation Standard (NIIEP/NDCRS) ⁷	NIIEP Default Impact to Groundwater Soil Remediation Standard (NIIEP/GWSRS) ⁸	Human Health Screening Criteria ⁹	Value	Source	CRCL							
													Analytical Method - SMM1.2 Low Soil		Analytical Method - SMM1.2 Low Soil	Analytical Method - SMM1.2 Medium Soil	Analytical Method - SMM1.2 Low Soil	Analytical Method - SMM1.2 High Soil		
Semi-Volatile Organic Compounds (ppb)																				
52-32-4	1,1,1-Trichloroethane	NL	NL	NL	NL	5,100 n	3,100,000	34,000,000	90,000	5,100	5,100	IPARSL	1,700	NL	170	5,000	-	-	Low	
95-94-3	1,2,4,5-Tetrachlorobenzene	NL	NL	2,020	2,020	1,800 n	NL	NL	NL	1,800	1,800	IPARSL	600	NL	170	5,000	-	-	Low	
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	19,900	19,900	4,600 ca	23,000	67,000	3,000	3,000	3,000	NIIEP/WSRS	1,000	NL	170	5,000	-	-	Low	
88-90-2	2,3,4,6-Tetrachlorophenol	NL	NL	199	199	180,000 n	NL	NL	180,000	199	199	IPARCS	170	NL	170	5,000	-	-	Low	
95-94-4	2,4,5-Trichlorophenol	NL	9,000	14,100	9,000	610,000 n	6,100,000	68,000,000	44,000	44,000	9,000	ECOPRG	3,000	NL	170	5,000	-	-	Low	
88-96-2	2,4,6-Trichlorophenol	NL	4,000	9,940	4,000	6,100 n	19,000	74,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
105-67-9	2,4-Dichlorophenol	NL	NL	87,500	87,500	18,000 n	180,000	2,300,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
51-28-5	2,4-Dinitrophenol	NL	NL	10	10	120,000 n	1,200,000	34,000,000	700	700	10	IPARCS	170	NL	170	5,000	-	-	Low	
121-14-2	2,4-Dinitrotoluene	NL	20,000	60.9	20,000	12,000 n	120,000	1,400,000	300 PCL	300	300	NIIEP/WSRS	330	NL	330	10,000	-	-	Low	
106-20-7	2,6-Dinitrotoluene	NL	NL	1280	1,280	1,600 ca	700	3,000	200 ¹ PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
101-88-7	2-Chlorophenol	NL	NL	32.8	32.8	6,100 n	700	3,000	200 ¹ PCL	200	32.8	IPARCS	170	NL	170	5,000	-	-	Low	
101-88-7	2-Chlorophenol	NL	NL	12.7	12.7	610,000 n	NL	NL	NL	12.7	12.7	IPARCS	170	NL	170	5,000	-	-	Low	
95-97-8	2-Chlorophenol	NL	NL	243	243	39,000 n	310,000	2,700,000	500	500	243	IPARCS	170	NL	170	5,000	-	-	Low	
91-57-6	2-Methylnaphthalene	NL	NL	3,740	3,740	11,000 n	230,000	2,400,000	5,000	5,000	3,740	IPARCS	1,080	3.3	170	5,000	-	-	Low	
95-48-7	2-Methylphenol (o-cresol)	NL	NL	NL	NL	310,000 n	310,000	3,400,000	NA	310,000	310,000	IPARSL	203,333	NL	170	5,000	-	-	Low	
88-94-4	2-Nitroaniline	NL	NL	74,100	74,100	61,000 n	39,000	25,000,000	NA	39,000	39,000	NIIEP/DCRS	13,000	NL	330	10,000	-	-	Low	
95-75-3	3-Nitrophenol	NL	NL	1,600	1,600	NL	NL	NL	NL	NL	1,600	IPARCS	533	NL	170	5,000	-	-	Low	
91-94-1	3,3'-Dichlorobenzidine	NL	NL	646	646	1,100 ca	1,000	4,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
99-09-2	3-Nitroaniline	NL	NL	3,160	3,160	NL	NL	NL	NL	3,160	3,160	IPARCS	1,053	NL	330	10,000	-	-	Low	
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	144	144	490 n	6,000	68,000	300 PCL	300	144	IPARCS	330	NL	330	10,000	-	-	Low	
101-55-3	4-Bromophenyl phenylether	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	170	NL	170	5,000	-	-	Low	
59-59-7	4-Chloro-3-methylphenol	NL	NL	NL	NL	610,000 n	NL	NL	NL	610,000	610,000	IPARSL	203,333	NL	170	5,000	-	-	Low	
106-47-8	4-Chloroaniline	NL	NL	1,100	1,100	2,400 ca	NL	NL	NL	2,400	1,100	IPARSL	367	NL	170	5,000	-	-	Low	
1005-72-3	4-Chlorophenyl phenylether	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	170	NL	170	5,000	-	-	Low	
106-44-5	4-Methylphenol	NL	NL	163,000	163,000	31,000 n	31,000	340,000	NA	31,000	31,000	IPARSL	10,333	NL	170	5,000	-	-	Low	
100-01-6	4-Nitroaniline	NL	NL	21,900	21,900	24,000 ca	NL	NL	NL	21,900	21,900	IPARCS	7,300	NL	330	10,000	-	-	Low	
100-02-7	4-Nitrophenol	NL	NL	5,120	7,000	NL	NL	NL	NL	7,000	7,000	ECOPRG	2,333	NL	330	10,000	-	-	Low	
63-82-9	Avenanthraquinone	29,000 ¹¹	20,000	682,000	29,000	340,000 n	3,400,000	37,000,000	74,000	74,000	29,000	IPARCS	9,667	3.3	170	5,000	-	-	Low	
108-86-8	Avenanthraquinone	29,000 ¹¹	NL	682,000	29,000	340,000 n(5)	NA	30,000,000	NA	340,000	29,000	IPARCS	9,667	3.3	170	5,000	-	-	Low	
86-86-2	Acetophenone	NL	NL	300,000	300,000	790,000 n	7,000	5,000	2,000	2,000	2,000	NIIEP/DCRS	667	NL	170	5,000	-	-	Low	
120-12-7	Anthracene	29,000 ¹¹	NL	1,480,000	29,000	170,000 n	17,000,000	30,000,000	1,500,000	1,500,000	29,000	IPARCS	9,667	3.3	170	5,000	-	-	Low	
1912-24-9	Atrazine	NL	NL	NL	NL	2100 ca	210,000	2,400,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
100-52-7	Benzaldehyde	NL	NL	NL	NL	780,000 n	6,100,000	68,000,000	NA	780,000	780,000	IPARSL	260,000	NL	170	5,000	-	-	Low	
106-95-3	Benzobenzothiazole	1,100 ¹²	NL	5,310	1,100	150 ca	400	2,000	500	350	150	IPARSL	50	3.3	170	5,000	-	-	SIM	
100-50-8	Benzobenzothiazole	1,100 ¹²	NL	1,520	1,100	15 ca	300	200	200 PCL	35	15	IPARSL	5	3.3	170	5,000	-	-	SIM	
105-99-2	Benzobenzofuran	NL	NL	59,800	59,800	150 ca	400	2,000	200	350	150	IPARSL	50	3.3	170	5,000	-	-	SIM	
191-24-2	Benzobenzofuran	1,100 ¹²	NL	119,000	1,100	170,000 n(6)	380,000,000	30,000,000	NA	170,000	1,100	IPARCS	367	3.3	170	5,000	-	-	Low	
107-08-9	Benzobenzofuran	NL	NL	148,000	148,000	1,500 ca	6,000	23,000	16,000	1,500	1,500	IPARCS	500	3.3	170	5,000	-	-	Low	
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	302	302	18,000 n	NL	NL	NL	302	302	IPARCS	170	NL	170	5,000	-	-	Low	
111-44-4	bis(2-Chloroethoxy)ether	NL	NL	23,700	23,700	210 ca	400	2,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	
117-81-7	bis(2-Ethoxyethyl)phthalate	NL	NL	925	925	35,000 ca	35,000	140,000	790,000	35,000	925	IPARCS	308	NL	170	5,000	-	-	Low	
95-88-7	Butylbenzylphthalate	NL	NL	739	739	26,000 ca	1,200,000	14,000,000	150,000	150,000	739	IPARCS	170	NL	170	5,000	-	-	Low	
105-60-7	Caprolactam	NL	NL	NL	NL	310,000 n	31,000,000	340,000,000	8,000	8,000	8,000	NIIEP/WSRS	2,667	NL	170	5,000	-	-	Low	
85-84-8	Carbazole	NL	NL	NL	NL	NL	24,000	96,000	NA	24,000	24,000	NIIEP/DCRS	8,000	NL	170	5,000	-	-	Low	
118-01-9	Chrysene	1,100 ¹²	NL	4,730	1,100	15,000 ca	62,000	210,000	52,000	15,000	1,100	IPARCS	367	3.3	170	5,000	-	-	Low	
115-90-3	Dibenz(a,h)anthracene	1,100 ¹²	NL	18,400	1,100	15 ca	300	200	500	15	15	IPARSL	5	3.3	170	5,000	-	-	SIM	
131-44-9	Dibenzofuran	NL	NL	NL	NL	7,800 n	NL	NL	NL	7,800	7,800	IPARSL	2,600	NL	170	5,000	-	-	Low	
146-62-7	Diethylphthalate	NL	100,000	24,800	300,000	4,900,000 n	48,000,000	530,000,000	57,000	57,000	24,800	NIIEP/WSRS	19,000	NL	170	5,000	-	-	Low	
131-11-3	Dimethylphthalate	NL	NL	734,000	734,000	NL	NL	NL	NL	734,000	734,000	IPARCS	244,667	NL	170	5,000	-	-	Low	
84-74-2	Diphenylphthalate	NL	200,000	150	300,000	610,000 n	6,100,000	68,000,000	620,000	610,000	200,000	ECOPRG	66,667	NL	170	5,000	-	-	Low	
117-84-0	Diphenylphthalate	NL	NL	759,000	759,000	NL	NL	NL	NL	759,000	759,000	IPARCS	244,667	NL	170	5,000	-	-	Low	
106-44-0	Fluorene	1,100 ¹²	NL	122,000	1,100	230,000 n	2,300,000	26,000,000	840,000	230,000	1,100	IPARCS	367	3.3	170	5,000	-	-	Low	
86-79-7	Fluorene	29,000 ¹¹	NL	122,000	29,000	230,000 n	2,300,000	26,000,000	110,000	110,000	29,000	IPARCS	9,667	3.3	170	5,000	-	-	Low	
118-74-1	Hexachlorobenzene	NL	NL	199	199	300 ca	300	1,000	200 PCL	200	199	IPARCS	170	NL	170	5,000	-	-	Low	
87-88-3	Hexachlorobutadiene	NL	NL	39.8	39.8	6,100 n	6,000	25,000	600	39.8	39.8	IPARCS	170	NL	170	5,000	-	-	Low	
77-47-4	Hexachlorocyclopentadiene	NL	10,000	755	10,000	37,000 n	45,000	110,000	210,000	37,000	10,000	ECOPRG	3,333	NL	170	5,000	-	-	Low	
87-72-1	Hexachloroethane	NL	NL	596	596	4,300 n	35,000	140,000	200 PCL	200	200	NIIEP/WSRS	170	NL	170	5,000	-	-	Low	

Table 1a
Reference Limits and Evaluation Table - Soils
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	Ecological Screening Criteria				Human Health Screening Criteria						Project Action Limit ¹⁰		Project Quantification Limit (PQL) (g/g)	Analytical Method					
		EPA EcoSLs (EPAECOS) ¹	Soil PRGs (ECOPRG) ²	EPA Region 5 (EPAECOS) ³	Ecological Screening Criteria ⁴	EPA Human Health Screening Level (IPARSL) ⁵	NDEP Residential Direct Contact Soil Remediation Standard (NRDCSRS) ⁶	NDEP Non-Residential Direct Contact Soil Remediation Standard (NNRDCSRS) ⁷	NDEP Default Impact to Groundwater Soil Remediation Standard (NIGWSRS) ⁸	Human Health Screening Criteria ⁹	Value	Source	ORGL							
													Analytical Method - SORML2 Low SIM		Analytical Method - SORML2 Low Sol	Analytical Method - SORML2 Medium Sol	Analytical Method - SORML2 Sol (Standard)	Analytical Method - SORML2 ICP-AES and MS by Sol	Project-Specific Option	
Semi-Volatile Organic Compounds (ug/kg)																				
193-39-5	Indeno(1,2,3-cd)pyrene	1,100 ¹	NL	109,000	1,100	150 ca	400	2,000	5,000	450	150	IPARSL	50	3.3	170	5,000	-	-	SIM	
191-09-1	Isothione	NL	NL	136,000	393,000	510,000 ca	510,000	2,000,000	200 PQL	200	200	NIGWSRS	170	NL	170	5,000	-	-	Low	
91-30-3	Naphthalene	29,000 ²	NL	99.4	29,000	3,500 ca	6,000	17,000	16,000	3,400	3,600	IPARSL	1,100	3.3	170	5,000	-	-	Low	
98-96-3	Nitrobenzene	NL	NL	1310	1,310	4,800 ca	33,000	340,000	200 PQL	200	200	NIGWSRS	170	NL	170	5,000	-	-	Low	
521-64-7	N-Nitroso-d-n-propylamine	NL	NL	NL	NL	69 ca	300	300	200 PQL	69	69	IPARSL	170	NL	170	5,000	-	-	Low	
95-10-6	N-Nitrosodiphenylamine	NL	NL	545	545	99,000 ca	99,000	390,000	200	200	200	NIGWSRS	170	NL	170	5,000	-	-	Low	
97-86-3	Peritachlorophenol	2,100	3,000	119	2,100	400 ca	3,000	10,000	500 PQL	80	90	NIGWSRS	100	6.7	330	10,000	-	-	SIM	
85-03-8	Phenanthrene	29,000 ²	NL	45,700	29,000	1,700,000 n(7)	NA	100,000,000	NA	1,700,000	79,000	IPARSL	9,667	1.3	170	5,000	-	-	Low	
108-95-2	Phenol	NL	30,000	NL	30,000	1,800,000 n	18,000,000	230,000,000	5,000	5,000	5,000	NIGWSRS	1,667	NL	170	5,000	-	-	Low	
129-00-0	Pyrene	1,100 ¹	NL	78,500	1,100	170,000 n	1,700,000	38,000,000	550,000	170,000	1,100	IPARSL	367	3.3	170	5,000	-	-	Low	

Source

¹ EPA Ecological Soil Screening Levels (EcolSLs). <http://www.epa.gov/ecotox/ecossl/>. Values selected are the lowest of the soil screening values for plants, avian, invertebrate, and mammalian receptors.

² Elroyson, R.A., G.W. Suter II, B.E. Sample, and D.S. Jones. 1997. Preliminary Remediation Goals (PRGs) for Ecological Endpoints.

³ Prepared for the U.S. Department of Energy, Office of Environmental Management Contract No. DE-AC05-84OR21403.

⁴ EPA 2003. EPA Region 5 Resource Conservation and Recovery Act (RCRA) Ecological Screening Levels.

⁵ Ecological screening values were applied in a hierarchical fashion beginning with the EPA EcolSL values.

⁶ EPA 2011. EPA Regional Screening Level (RSL) for residential soil. To account for exposure to multiple chemicals, RSLs for chemicals based on noncancer effects are decreased by a factor of 10 to account for a target hazard quotient (THQ) of 0.1. November. <http://www.epa.gov/region08/superfund/pq/index.html>

⁷ NDEP 2009. Residential Direct Contact Health Based Criteria and Soil Remediation Standards (Last Revised 11/2009). <http://www.nj.gov/dep/soil/remed/rsj/>, downloaded November 27, 2014. Criteria were selected from the lowest of the ingestion/dermal or inhalation health based criteria.

⁸ NDEP 2009. Non-Residential Direct Contact Health Based Criteria and Soil Remediation Standards (Last Revised 11/2009). <http://www.nj.gov/dep/soil/remed/rsj/>, downloaded November 27, 2014. Criteria were selected from the lowest of the ingestion/dermal or inhalation health based criteria.

⁹ NDEP 2008. Guidance Document, Development of Site-Specific Impact to Groundwater Soil Remediation Standards Using the Soil-Water Partition Equation (Revised December 2008). http://www.nj.gov/dep/soil/remed/rsj/gw_intro.htm, downloaded November 27, 2014.

¹⁰ Human health screening values were selected from the lowest value of the four sets of criteria.

¹¹ Project Action Limits were selected from the lowest of the ecological and human health screening criteria.

Notes:

a - value for trivalent chromium

b - value for low molecular weight PAHs

c - value for high molecular weight PAHs

d - value for DDT and its metabolites

e - value for PCBs

f - value for chlordane

* health based criterion defaults to soil saturation limit

mg/kg - milligram per kilogram

ug/kg - microgram per kilogram

DL - detection limit

PQL - practical quantitation limit

PQIG - project quantitation limit goal

NA - not applicable or not available

NL - not listed

Notes (continued):

o - Screening criteria value is lower than the PQL. PQIG Highlighted.

FOOTNOTES FOR HUMAN HEALTH SCREENING LEVELS

¹⁴ OSWER screening value for residential soil

¹⁵ screening value for methyl mercury

¹⁶ screening value for trichloroethylene

¹⁷ screening value for vanadium and compounds

¹⁸ screening value for acrophenylene

¹⁹ screening value for pyrene

²⁰ screening value for anthracene

²¹ screening value for chlordane

²² screening value for endosulfan

²³ screening value for chlordane

²⁴ screening value for endosulfan

ca - value based on cancer effects

n - value based on noncancer effects

COPC - contaminant of potential concern

s - concentration may exceed saturation concentration

* aluminum is identified as a COPC only at sites where the soil pH is less than 5.5

o - Iron is not a concern in well-aerated soils between a pH of 5 and 8, as the demand for iron in plants is higher than the amount available

Table 1b
Reference Limits and Evaluation Table - Groundwater
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	New Jersey Groundwater Quality Standards Class 1A Water (NIGQS) ¹	New Jersey Drinking Water Standards (NJMCL) ²	EPA National Primary Drinking Water Standards (EPAMCL) ³	Project Action Unit ⁴		Project Quantitation Limit Goal (PQLG)	Analytical Method							Project-Specific Options
					Value	Source		ORQL							
								Analytical Method - SOM01.2 Trace Water by SIM	Analytical Method - SOM01.2 Trace Water	Analytical Method - SOM01.2 Low Water	Analytical Method - SOM01.2 Water (Standard)	Analytical Method - ISM0 1.2 ICP-AES	Analytical Method - ISM01.2 (CP- MS		
Pesticides/Polychlorinated Biphenyls (µg/L)															
72-54-8	4,4'-DDD	0.1	NL	NL	0.1	NIGQS	0.1	-	-	-	0.1	-	-	Standard	
72-55-9	4,4'-DDE	0.1	NL	NL	0.1	NIGQS	0.1	-	-	-	0.1	-	-	Standard	
50-29-3	4,4'-DDT	0.1	NL	NL	0.1	NIGQS	0.1	-	-	-	0.1	-	-	Standard	
109-00-2	Aldrin	0.04	NL	NL	0.04	0	NIGQS	0.05	-	-	0.05	-	-	Standard	
519-84-6	alpha-BHC	0.02	NL	NL	0.02	0	NIGQS	0.05	-	-	0.05	-	-	Standard	
5103-71-9	alpha-Chlordane	0.5 ⁵	0.5 ⁶	2 ⁷	0.5	NIGQS	0.17	-	-	-	0.05	-	-	Standard	
12674-11-2	Aroclor-1016	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
11104-28-2	Aroclor-1221	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
11141-16-5	Aroclor-1232	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
53469-21-9	Aroclor-1242	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
12672-29-6	Aroclor-1248	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
11097-69-1	Aroclor-1254	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
11096-82-5	Aroclor-1260	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
17324-23-5	Aroclor-1262	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
11100-14-4	Aroclor-1268	0.5 ⁷	0.5 ⁷	0.5 ⁷	0.5	NIGQS	0.014	-	-	-	1	-	-	MA	
519-85-7	beta-BHC	0.04	NL	NL	0.04	0	NIGQS	0.05	-	-	0.05	-	-	Standard	
519-86-8	delta-BHC	NL	NL	NL	NL	NL	0.05	-	-	-	0.05	-	-	Standard	
50-57-1	Dieldrin	0.03	NL	NL	0.03	0	NIGQS	0.1	-	-	0.1	-	-	Standard	
559-98-8	Endosulfan I	40	NL	NL	40	NIGQS	13	-	-	-	0.05	-	-	Standard	
53213-66-9	Endosulfan II	40	NL	NL	40	NIGQS	13	-	-	-	0.1	-	-	Standard	
1051-07-8	Endosulfan Sulfate	40	NL	NL	40	NIGQS	13	-	-	-	0.1	-	-	Standard	
72-20-6	Endrin	2	2	2	2	NIGQS	0.7	-	-	-	0.1	-	-	Standard	
7421-93-4	Endrin aldehyde	NL	NL	NL	NL	NL	0.1	-	-	-	0.1	-	-	Standard	
53494-70-5	Endrin ketone	NL	NL	NL	NL	NL	0.1	-	-	-	0.1	-	-	Standard	
58-89-9	gamma-BHC (Lindane)	0.03	0.2	0.2	0.03	0	NIGQS	0.05	-	-	0.05	-	-	Standard	
5103-74-2	gamma-Chlordane	0.5 ⁸	0.5 ⁸	2 ⁹	0.5	NIGQS	0.2	-	-	-	0.05	-	-	Standard	
76-44-8	Heptachlor	0.05	0.4	0.4	0.05	NIGQS	0.05	-	-	-	0.05	-	-	Standard	
1024-57-3	Heptachlor epoxide	0.2	0.2	0.2	0.2	NIGQS	0.1	-	-	-	0.05	-	-	Standard	
72-43-5	Methoxychlor	40	40	40	40	NIGQS	13	-	-	-	0.5	-	-	Standard	
8001-35-2	Nonaphene	2	3	3	2	0	NIGQS	5	-	-	5	-	-	Standard	

Table 1b
Reference Limits and Evaluation Table - Groundwater
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	New Jersey Groundwater Quality Standards Class 1/A Water (NIGQS) ¹	New Jersey Drinking Water Standards (NJMCL) ²	EPA National Primary Drinking Water Standards (EPAMCL) ³	Project Action Unit ⁴		Project Quantitation Limit Goal (PQLG)	Analytical Method						Project- Specific Option
					Value	Source		ORCL						
								Analytical Method - SOM01.2 Trace Water by SIM	Analytical Method - SOM01.2 Trace Water	Analytical Method - SOM01.2 Low Water	Analytical Method - SOM01.2 Water (Standard)	Analytical Method - ISM0 1.2 ICP-AES	Analytical Method - ISM01.2 (CP- MS	
Volatile Organic Compounds (µg/L)														
71-55-6	1,1,1-Trichloroethane	30	30	200	30	NIGQS	10	NL	0.5	5	-	-	-	Low
79-34-5	1,1,2,2-Tetrachloroethane	1	1	NL	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
79-00-5	1,1,2-Trichloroethane	3	3	5	3	NIGQS	1	NL	0.5	5	-	-	-	Low
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Trace
75-34-3	1,1-Dichloroethane	50	50	NL	50	NIGQS	17	NL	0.5	5	-	-	-	Low
75-35-4	1,1-Dichloroethane	1	2	7	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
87-61-6	1,2,3-Trichlorobenzene	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Low
120-82-1	1,2,4-Trichlorobenzene	9	9	70	9	NIGQS	3	NL	N/A	5	-	-	-	Low
96-12-8	1,2-Dibromo-3-chloropropane	0.02	0.2	0.2	0.02	0	0.1	0.05	0.5	5	-	-	-	Sim
106-93-4	1,2-Dibromobenzene	0.03	0.05	0.05	0.03	0	0.1	0.05	0.5	5	-	-	-	Sim
95-50-1	1,2-Dichlorobenzene	600	600	600	600	NIGQS	200	NL	0.5	5	-	-	-	Low
107-06-2	1,2-Dichloroethane	2	2	5	2	NIGQS	0.7	NL	0.5	5	-	-	-	Trace
78-87-5	1,2-Dichloropropane	1	5	5	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
541-73-1	1,3-Dichlorobenzene	600	600	NL	600	NIGQS	200	NL	0.5	5	-	-	-	Low
106-46-7	1,4-Dichlorobenzene	75	75	75	75	NIGQS	25	NL	0.5	5	-	-	-	Low
123-91-1	1,4-Dioxane	10 IS GC	NL	NL	10	NIGQS	10	NL	NL	100	-	-	-	MA
78-93-3	2-Butanone	300	NL	NL	300	NIGQS	100	NL	5	10	-	-	-	Low
591-78-6	2-Hexanone	300 IS GC	NL	NL	300	NIGQS	100	NL	5	10	-	-	-	Low
108-10-1	4-Methyl-2-pentanone	NL	NL	NL	NL	NL	5	NL	5	10	-	-	-	Low
67-64-1	Acetone	6,000	NL	NL	6,000	NIGQS	2000	NL	5	10	-	-	-	Low
71-43-2	Benzene	1	1	5	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
74-97-5	Bromochloromethane	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Low
75-27-4	Bromodichloromethane	1	80 ^b	80 ^b	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
75-25-2	Bromoform	4	80 ^b	80 ^b	4	NIGQS	1.3	NL	0.5	5	-	-	-	Trace
74-83-9	Bromomethane	10	NL	NL	10	NIGQS	3	NL	0.5	5	-	-	-	Low
75-15-0	Carbon Disulfide	700	NL	NL	700	NIGQS	233	NL	0.5	5	-	-	-	Low
56-23-5	Carbon Tetrachloride	1	2	5	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
108-90-7	Chlorobenzene	50	50	100	50	NIGQS	17	NL	0.5	5	-	-	-	Low
75-00-3	Chloroethane	5 NIGQS	NL	5	5	NIGQS	2	NL	0.5	5	-	-	-	Low
67-66-3	Chloroform	70	80 ^b	80 ^b	70	NIGQS	23	NL	0.5	5	-	-	-	Low
74-87-3	Chloromethane	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Low
156-59-2	cis-1,2-Dichloroethene	70	70	70	70	NIGQS	23	NL	0.5	5	-	-	-	Low
10061-01-5	cis-1,3-Dichloropropene	1 ^c	NL	NL	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
110-82-7	Cyclohexane	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Trace
124-48-1	Dibromochloromethane	1	80 ^b	80 ^b	1	NIGQS	0.5	NL	0.5	5	-	-	-	Trace
75-71-9	Dichlorodifluoromethane	1,000	NL	NL	1,000	NIGQS	333	NL	0.5	5	-	-	-	Low
100-41-4	Ethylbenzene	700	700	700	700	NIGQS	233	NL	0.5	5	-	-	-	Low
98-82-8	Isopropylbenzene	700	NL	NL	700	NIGQS	233	NL	0.5	5	-	-	-	Low
79-20-9	Methyl Acetate	7,000	NL	NL	7,000	NIGQS	2333	NL	0.5	5	-	-	-	Low
1634-04-4	Methyl Tert-Butyl Ether	70	70	NL	70	NL	23	NL	0.5	5	-	-	-	Low
108-87-2	Methylocyclohexane	NL	NL	NL	NL	NL	0.5	NL	0.5	5	-	-	-	Low
75-09-2	Methylene Chloride	3	3	5	3	NIGQS	1.0	NL	0.5	5	-	-	-	Trace
100-42-5	Styrene	100	100	100	100	NIGQS	33	NL	0.5	5	-	-	-	Low

Table 1b
Reference Limits and Evaluation Table - Groundwater
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	New Jersey Groundwater Quality Standards Class 1A Water (NJGQS) ¹	New Jersey Drinking Water Standards (NJMCL) ²	EPA National Primary Drinking Water Standards (EPA MCL) ³	Project Action Limit ⁴		Project Quantitation Limit Goal (PQLG)	Analytical Method							Project-Specific Option
					Value	Source		ORCL							
								Analytical Method - SOM01.2 Trace Water by SIM	Analytical Method - SOM01.2 Trace Water	Analytical Method - SOM01.2 Low Water	Analytical Method - SOM01.2 Water (Standard)	Analytical Method - ISM0 1.2 ICP-AES	Analytical Method - ISM01.2 (CP- MS)		
Volatile Organic Compounds (µg/L)															
127-18-4	Tetrachloroethene	1	1	5	1	NJGQS	0.5	NL	0.5	5	-	-	-	Trace	
108-88-3	Toluene	600	1,000	1,000	600	NJGQS	200	NL	0.5	5	-	-	-	Low	
156-60-5	trans-1,2-Dichloroethene	100	100	100	100	NJGQS	33	NL	0.5	5	-	-	-	Low	
10061-02-6	trans-1,3-Dichloropropene	1 ⁴	NL	NL	1	NJGQS	0.5	NL	0.5	5	-	-	-	Trace	
79-01-6	Trichloroethene	1	1	5	1	NJGQS	0.5	NL	0.5	5	-	-	-	Trace	
75-69-4	Trichlorofluoromethane	2,000	NL	NL	2,000	NJGQS	667	NL	0.5	5	-	-	-	Low	
75-01-4	Vinyl Chloride	1	2	2	1	NJGQS	0.5	NL	0.5	5	-	-	-	Trace	
1330-20-7	Xylenes (Total)	1,000	1,000	10,000	1,000	NJGQS	333	NL	0.5	5	-	-	-	Low	
Semi-Volatile Organic Compounds (µg/L)															
92-52-4	1,1'-Biphenyl	400	NL	NL	400	NJGQS	133	NL	-	5	-	-	-	Low	
95-94-3	1,2,4,5-Tetrachlorobenzene	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
108-60-1	2,2'-oxybis(1-Chloropropane)	800	NL	NL	300	NJGQS	100	NL	-	5	-	-	-	Low	
95-95-4	2,4,5-Trichlorophenol	700	NL	NL	700	NJGQS	233	NL	-	5	-	-	-	Low	
88-06-2	2,4,6-Trichlorophenol	20	NL	NL	20	NJGQS	7	NL	-	5	-	-	-	Low	
120-83-2	2,4-Dichlorophenol	20	NL	NL	20	NJGQS	7	NL	-	N/A	-	-	-	Low	
105-67-9	2,4-Dimethylphenol	100	NL	NL	100	NJGQS	33	NL	-	5	-	-	-	Low	
91-28-5	2,4-Dinitrophenol	40	NL	NL	40	NJGQS	13	NL	-	10	-	-	-	Low	
121-14-2	2,4-Dinitrotoluene	10 ⁴	NL	NL	10	NJGQS	5	NL	-	5	-	-	-	Low	
906-20-2	2,6-Dinitrotoluene	10 ⁴	NL	NL	10	NJGQS	5	NL	-	5	-	-	-	Low	
91-58-7	2-Chloronaphthalene	600	NL	NL	600	NJGQS	200	NL	-	5	-	-	-	Low	
95-57-8	2-Chlorophenol	40	NL	NL	40	NJGQS	13	NL	-	5	-	-	-	Low	
91-57-6	2-Methylnaphthalene	30 IS GC	NL	NL	30	NJGQS	10	0.1	-	5	-	-	-	Low	
95-48-7	2-Methylphenol	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
98-74-4	2-Nitroaniline	NL	NL	NL	NL	NL	10	NL	-	10	-	-	-	Low	
88-75-5	2-Nitrophenol	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
91-94-1	3,3'-Dichlorobenzidine	30	NL	NL	30	NJGQS	10	NL	-	5	-	-	-	Low	
99-09-2	3-Nitroaniline	NL	NL	NL	NL	NL	10	NL	-	10	-	-	-	Low	
534-52-1	4,6-Dinitro-2-methylphenol	1 IS GC	NL	NL	1	NJGQS	10	NL	-	10	-	-	-	Low	
101-55-3	4-Bromophenyl-phenylether	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
99-50-7	4-Chloro-3-methylphenol	100 IS GC	NL	NL	100	NJGQS	33	NL	-	5	-	-	-	Low	
106-47-8	4-Chloroaniline	30	NL	NL	30	NJGQS	10	NL	-	5	-	-	-	Low	
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
106-44-5	4-Methylphenol	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
100-01-6	4-Nitroaniline	NL	NL	NL	NL	NL	10	NL	-	10	-	-	-	Low	
100-02-7	4-Nitrophenol	NL	NL	NL	NL	NL	10	NL	-	10	-	-	-	Low	
83-32-9	Acenaphthene	400	NL	NL	400	NJGQS	133	0.1	-	5	-	-	-	Low	
108-96-8	Acenaphthylene	100 IS GC	NL	NL	100	NJGQS	33	0.1	-	5	-	-	-	Low	
98-86-2	Acetophenone	700	NL	NL	700	NJGQS	233	NL	-	5	-	-	-	Low	
120-12-7	Anthracene	2,000	NL	NL	2,000	NJGQS	667	0.1	-	5	-	-	-	Low	
1912-24-9	Atrazine	3	3	3	3	NJGQS	5	NL	-	5	-	-	-	Low	
100-52-7	Benzaldehyde	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
56-55-3	Benzo(a)anthracene	0.1	NL	NL	0.1	NJGQS	0.1	0.1	-	5	-	-	-	SIM	
50-32-8	Benzo(a)pyrene	0.1	0.2	0.2	0.1	NJGQS	0.1	0.1	-	5	-	-	-	SIM	
205-99-2	Benzo(b)fluoranthene	0.2	NL	NL	0.2	NJGQS	0.1	0.1	-	5	-	-	-	SIM	

Table 1b
Reference Limits and Evaluation Table - Groundwater
Matteo and Sons, Inc. Site
Thorofare, NJ

CAS Number	Chemical Name	New Jersey Groundwater Quality Standards Class 1A Water (NJGQS) ¹	New Jersey Drinking Water Standards (NJMCL) ²	EPA National Primary Drinking Water Standards (EPMCL) ³	Project Action Limit ⁴		Project Quantitation Limit Goal (PQLG)	Analytical Method							Project-Specific Options
					Value	Source		ORCL							
								Analytical Method - SOM01.2 Trace Water by SIM	Analytical Method - SOM01.2 Trace Water	Analytical Method - SOM01.2 Low Water	Analytical Method - SOM01.2 Water (Standard)	Analytical Method - ISM01.2 ICP-AES	Analytical Method - ISM01.2 ICP-MS		
Semi-Volatile Organic Compounds (µg/L)															
191-24-2	Benzo[a]anthracene	100 ISGC	NL	NL	100	NJGQS	33	0.1	-	5	-	-	-	Low	
207-08-9	Benzo[a]fluoranthene	0.5	NL	NL	0.5	NJGQS	0.2	0.1	-	5	-	-	-	SIM	
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
111-44-4	bis(2-Chloroethyl)ether	7	NL	NL	7	NJGQS	5	NL	-	5	-	-	-	Low	
117-81-7	bis-(2-Ethylhexyl)phthalate	3	6	6	3	0	NJGQS	5	NL	-	5	-	-	Low	
85-68-7	Butylbenzylphthalate	100	NL	NL	100	NJGQS	33	NL	-	5	-	-	-	Low	
105-60-2	Caprolactam	5,000 ISGC	NL	NL	5,000	NJGQS	1667	NL	-	5	-	-	-	Low	
86-74-8	Carbazole	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
218-01-9	Chrysene	5	NL	NL	5	NJGQS	5	0.1	-	5	-	-	-	Low	
53-70-3	Dibenz[a,h]anthracene	0.3	NL	NL	0.3	NJGQS	0.1	0.1	-	5	-	-	-	SIM	
132-64-9	Dibenzofuran	NL	NL	NL	NL	NL	5	NL	-	5	-	-	-	Low	
84-66-2	Diethylphthalate	6,000	NL	NL	6,000	NJGQS	2,000	NL	-	5	-	-	-	Low	
131-11-3	Dimethylphthalate	100 ISGC	NL	NL	100	NJGQS	33	NL	-	5	-	-	-	Low	
84-74-2	Din-butylphthalate	700	NL	NL	700	NJGQS	233	NL	-	5	-	-	-	Low	
117-84-0	Din-octylphthalate	100	NL	NL	100	NJGQS	33	NL	-	5	-	-	-	Low	
206-44-0	Fluoranthene	800	NL	NL	300	NJGQS	100	0.1	-	5	-	-	-	Low	
86-73-7	Fluorene	300	NL	NL	300	NJGQS	100	0.1	-	5	-	-	-	Low	
118-74-1	Hexachlorobenzene	0.02	1	1	0.02	0	NJGQS	5	NL	-	5	-	-	Low	
17-68-3	Hexachlorobutadiene	1	NL	NL	1	0	NJGQS	5	NL	-	5	-	-	Low	
72-47-4	Hexachlorocyclopentadiene	40	50	50	40	NJGQS	13	NL	-	5	-	-	-	Low	
87-72-1	Hexachloroethane	7	NL	NL	7	NJGQS	5	NL	-	5	-	-	-	Low	
193-39-5	Isodiol 1,2,3-cdipylene	0.2	NL	NL	0.2	NJGQS	0.1	0.1	-	5	-	-	-	SIM	
78-59-1	Isophorone	40	NL	NL	40	NJGQS	13	NL	-	5	-	-	-	Low	
91-20-3	Naphthalene	300	300	NL	300	NJGQS	100	0.1	-	5	-	-	-	Low	
98-95-3	Nitrobenzene	6	NL	NL	6	NJGQS	5	NL	-	5	-	-	-	Low	
621-64-7	N-Nitroso-di-n-propylamine	10	NL	NL	10	NJGQS	5	NL	-	5	-	-	-	Low	
86-30-6	N-Nitrosodiphenylamine	10	NL	NL	10	NJGQS	5	NL	-	5	-	-	-	Low	
87-86-5	Pentachlorophenol	0.3	1	1	0.3	NJGQS	0.2	0.2	-	10	-	-	-	SIM	
95-01-8	Phenanthrene	100 ISGC	NL	NL	100	NJGQS	33	0.1	-	5	-	-	-	Low	
108-95-2	Phenol	2,000	NL	NL	2,000	NJGQS	667	NL	-	5	-	-	-	Low	
129-00-0	Pyrene	200	NL	NL	200	NJGQS	67	0.1	-	5	-	-	-	Low	

Sources:

¹ New Jersey Ground Water Quality Standards Class 1A (NJAC 7:9C), July 22, 2010, downloaded November 27, 2014

New Jersey Interim Specific & Generic Groundwater Quality Criteria (http://www.nj.gov/dep/wms/bwqa/gwqs_interim_criteria_table.htm)

² New Jersey Drinking Water Standards, October 2009 (<http://www.nj.gov/dep/standards/drinking620water.pdf>), downloaded November 27, 2014

³ EPA National Primary Drinking Water Regulations, EPA 816-F-03-016, May 2009, downloaded November 27, 2014

⁴ Project action limits were applied in a hierarchical fashion beginning with the New Jersey values

Notes:

µg/L - microgram per liter

NL - not listed

ML - Maximum Contaminant Level

PQLG - project quantitation limit goal

TT - Treatment Technique

[AL] - Action Level

ISGC - Interim Specific Groundwater Quality Criteria

IGGC - Interim Generic Groundwater Quality Criteria

* - secondary standards

** - an action level is not an MCL. It is a trigger point at which remediation is to take place.

0 - Screening criteria value is lower than the PQLG. The PQLGs are highlighted.

^a - value for chromium

^b - value for total of dichlorobromomethane, chlorodibromomethane, bromoform, and chloroform

^c - value listed is that for 1,3-dichloropropene

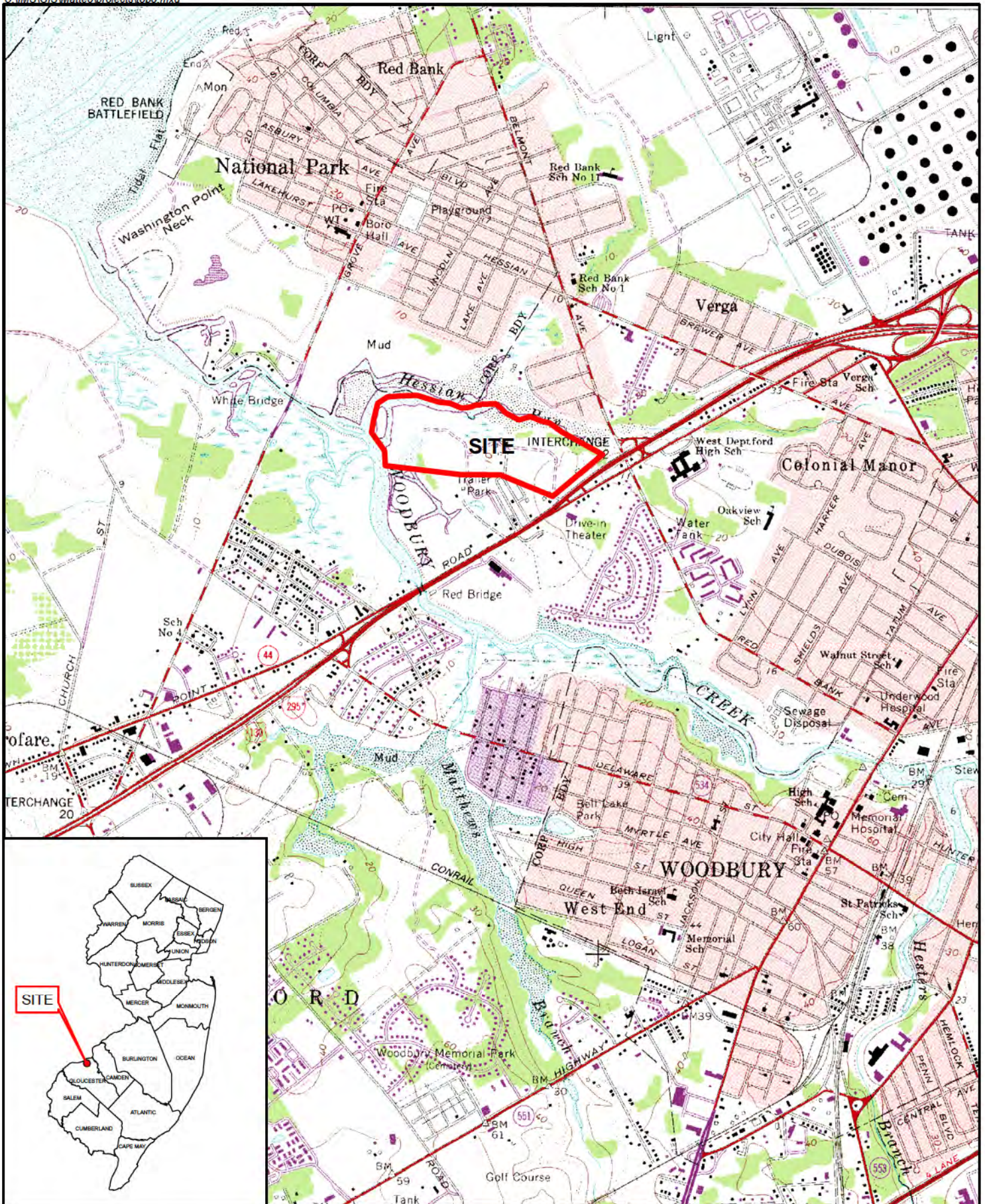
^d - value for mixture of 2,4-dinitrotoluene and 2,6-dinitrotoluene

^e - value for chlordane

^f - value for polychlorinated biphenyl



Figures



Source: USGS 7.5 Minute Quadrangle, Woodbury, NJ

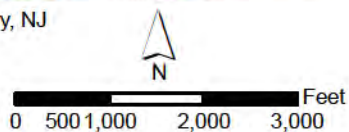
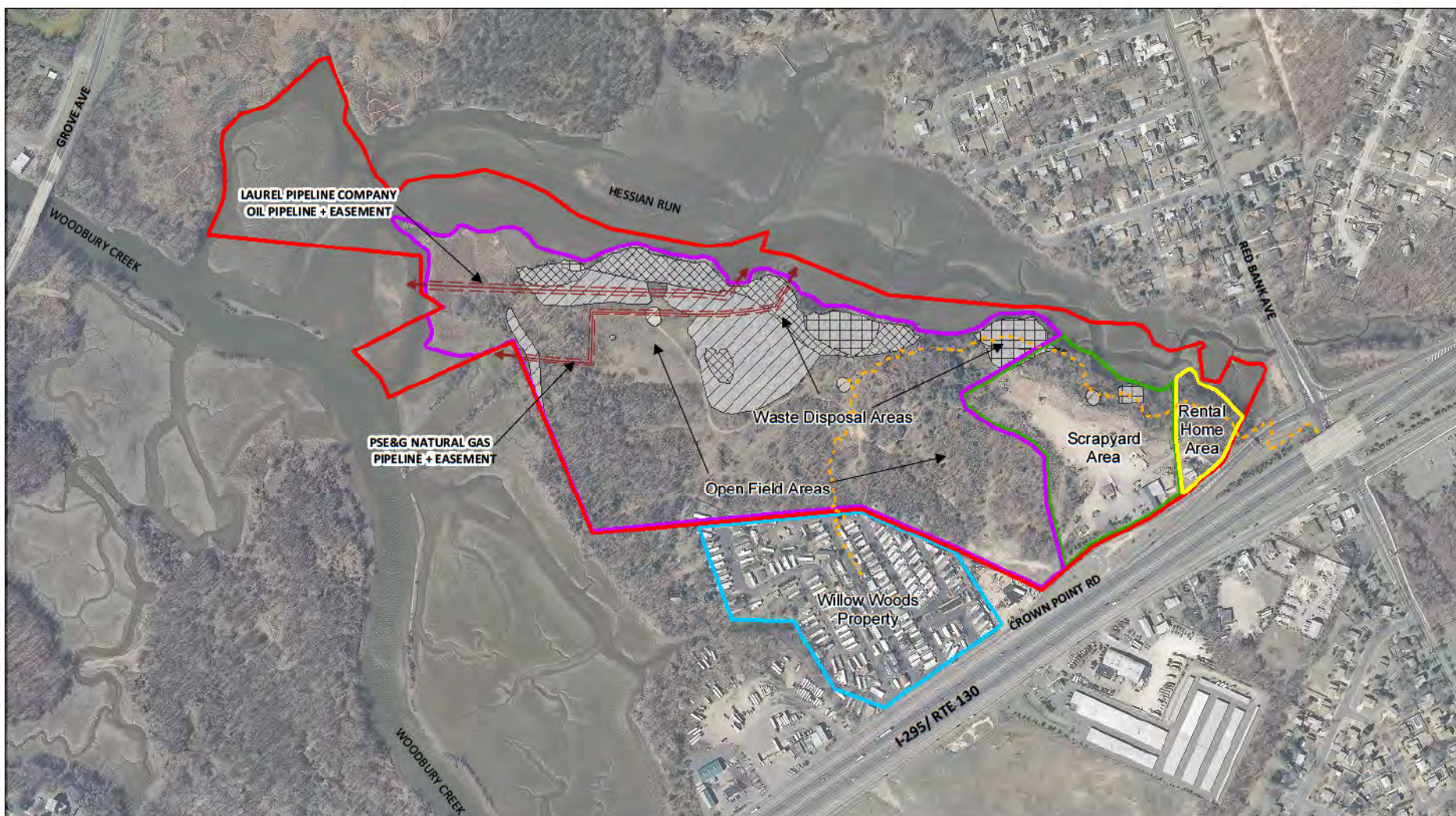


Figure1
Site Location Map
Matteo & Sons, Inc. Site
Thorofare, Gloucester County, New Jersey



Site Areas

- Matteo Property
- Scrapyard Area
- Open Field/Waste Disposal Area
- Rental Home Area

Designated Waste Disposal Areas

- Batteries and Waste
- Batteries
- Waste

- Approximate Extent of 100-Year Flood Event
- Utility Line and Easement

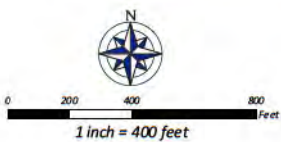
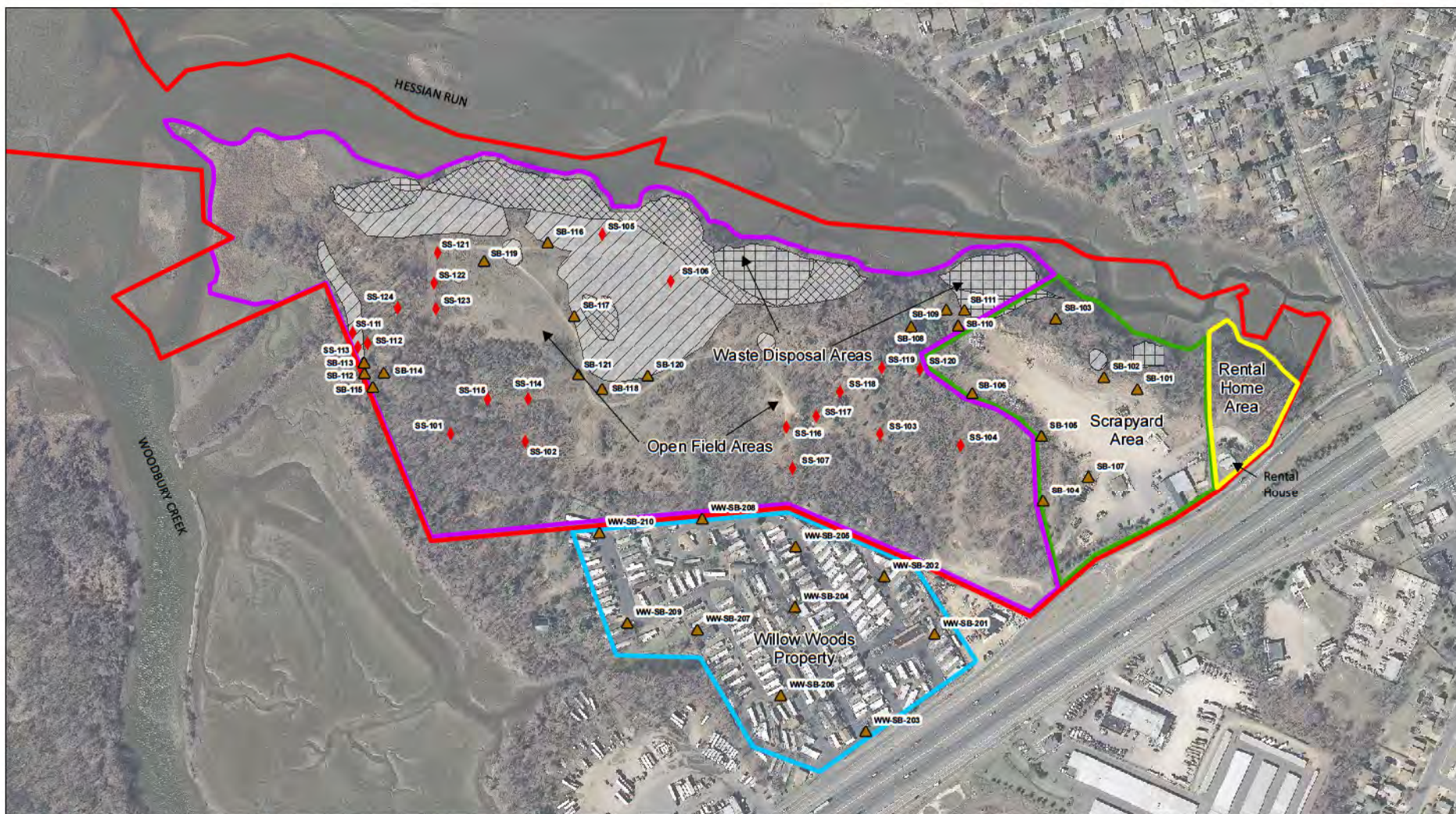


Figure 2
Site Map
 Matteo & Sons, Inc. Site
 Thorofare, NJ

**CDM
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- Site Areas**
- Matteo Property
 - Scrapyard Area
 - Open Field/Waste Disposal Area
 - Rental Home Area

- Sampling Locations**
- ▲ RI Soil Boring
 - ◆ RI Surface Soil

- Delineated Waste Disposal Areas**
- Batteries and Waste
 - Batteries
 - Waste

Note: 10 additional surface soil samples will be collected in the Rental Home Area. Locations will be determined following site reconnaissance.



Figure 3
Soil Sampling Locations
Matteo & Sons, Inc. Site
Thorofare, NJ

**CDM
Smith**



- Site Areas**
- Matteo Property
 - Scrapyard Area
 - Open Field/Waste Disposal Area
 - Rental Home Area

- RI Monitoring Well
- NJDEP RI Monitoring Well

Delineated Waste Disposal Areas

- Batteries and Waste
- Batteries
- Waste

Note: One additional potable well may be sampled at the former Billy-O-Tire Property, this will be determined during site reconnaissance.

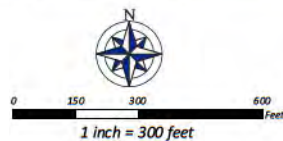


Figure 4
Monitoring Well Locations
Matteo & Sons, Inc. Site
Thorofare, NJ

**CDM
Smith**